	Application No.	Applicant(s)
Notice of Allowability .	09/268,999	ARITA, YUICHI
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *December 15, 2004*.

2. ☒ The allowed claim(s) is/are *1-25 and 29*.

3. ☒ The drawings filed on *16 March 1999 and 12 February 2003* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☒ All   b) ☐ Some*   c) ☐ None of the:
       1. ☒ Certified copies of the priority documents have been received.
       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the
          International Bureau (PCT Rule 17.2(a)).
    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .
    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
       Paper No./Mail Date _____ .
    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)
1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____ .

SAMUEL BRODA, ESQ.
PRIMARY EXAMINER

DETAILED ACTION

Introduction

1.   This communication is in response to the Applicant's response filed on

December 15, 2004. Claims 1, 9, 10, 11, 13, 22, 23, 24, 26 and 29 were amended.

Claims 1-29 of the application are pending.

Examiner's Amendment

2.   Authorization for this examiner's amendment was given in a telephone interview with

Mr. James Storm on January 13, 2005.

        An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

3.   In the Claims:

        In amended claim 13, Lines 11-14, "automatically acquiring the working means model,

which is to be used in working the individual standard part model, based on said working means

model information linked with said standard part model information that indicates the details of

the last-named individual standard part model"

        has been changed to

-- automatically acquiring the working means model, which is to be used in working the individual standard part model, based on said working means model information being linked with said standard part model information that indicates the details of the individual standard part model--.

In amended claim 22, Lines 4-6, "a simulation of working of a working means model used to work for the standard part models arranged in the design model"

has been changed to

-- a simulation of working of a working means model used to work the standard part models arranged in the design model --.

Claims 26-28 have been cancelled.

Reasons for Allowance

3.   Claims 1-25 and 29 of the application are allowed over prior art of record.

4.   The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a virtual environment for disassembly using computer based simulation in which a virtual prototype is manipulated by a user; the product includes several components and fasteners

connecting them; the virtual environment represents the user's movements, operations requiring

complex motions, interference between objects etc.; user is represented by his hand model used

to manipulate the components; the hand grabs the tools and performs unfastening motions and

removes unfastened components and fasteners; a reference point is used to store the position and

orientation of the hand and to track the movement of the hand and simulate disassembly motions;

a reference point and orientation of the tool axes are used to position the tool in the hand; the tool

and the hand are simulated by rotating and translating them along the axis of the unfastening

motion; bounding box method of interference checking is used to ensure that when moving

around the virtual environment the objects do not collide (**Siddique,** Thesis to The Academic

faculty for Master of Science in Mechanical Engineering, Georgia Institute of Technology, May

1996);

(2) an automatic design apparatus using a CAD/CAM system for designing a jig with

plurality of components; the designer selects the parts from a graphic database in an interactive

manner; the apparatus comprises a linkage model showing linkage between the parts and a

structural model for generating the structure of the parts; a geometric model expresses the

geometric relationship between components; a design database stores the data used in designing;

if standard parts are present in the system, part specification specifies selection conditions for

selecting standard parts; the system performs the detailed design in an interactive manner with

the designer; when structural model is performed interference between the jig and the workpiece

is examined and the design modified to eliminate the interference; the standard parts database is

used to select the standard parts to meet the specification (**Goto et al.,** U.S. Patent 5,075,866);

(3) an apparatus for searching and producing a disassembly route for disassembling a product consisting of a plurality of components and producing an assembly route using the disassembly route, using simulation; the system is capable of simulating whether the product can be actually assembled or disassembled without actually manufacturing the product; the disassembly route involving no collision of components is searched using a three-dimensional CAD system; the assembly route is traced reversely from the disassembly route involving no collision; the collision detection means perform arithmetic operations to determine the closest approach distance between the part in the disassembly and the remaining parts to determine the occurrence of collision; the apparatus has a display for displaying figures of the parts approaching one another in a dangerous state (**Hirata et al.,** U.S. Patent 6,157,902); and

(4) a machining method in which a numerically controlled apparatus carries out a series of operations such as determination of machining procedures, selection of the tool, preparation of a workpiece, selection of inspection programs etc.; the tools are selected taking into account the material to be machined, machining tools and the machining accuracy; automatic selection of a tool is done from a database storing the shape data and the machining steps for each tool; threading tool is selected from the database based on the depth and pitch of the threads; cutting tool size and bit material are selected from the database based on the machining data and the workpiece material (**Hirai et al.,** U.S. Patent 5,815,400).

4.1   Applicant's first set of claims consists of Claims 1-8, 12 and 29.

Independent Claim 1 is directed to a simulation apparatus for simulating working of a working means model to be used for the one or more standard part models arranged in the design model. The claim identifies the uniquely distinct features of:

"a working simulation execution section for executing a three-dimensional simulation of the working of one of the standard part models with the working means model based on design information of the design model and the information regarding the working means model extracted by said working means model information extraction section, where the working means model is automatically selected from among plural other working means models pre-associated with the one standard part model based on an automatic determination according to a result of the simulation that it satisfies a working condition of the working means model".

The closest prior art fails to teach or fairly suggest that the working means model is automatically selected from among plural other working means models pre-associated with the one standard part model based on an automatic determination according to a result of the simulation that it satisfies a working condition of the working means model, as claimed by the Applicant. Therefore, Claims 1-8, 12 and 29 are deemed novel and allowable.

4.2   Applicant's second set of claims consists of Claim 9.

Independent Claim 9 is directed to a simulation apparatus for simulating working of the standard part models arranged in the design model. The claim identifies the uniquely distinct features of:

"said working means model information storage section stores information regarding

working spaces necessary for working of the working means models as the information

regarding the working conditions of the individual working means model, where the working

means model is automatically selected from among plural other working means models pre-

associated with the one standard part model based on an automatic determination according to

the simulation that it satisfies a working condition of the working means model".

The closest prior art fails to teach or fairly suggest that the working means model is

automatically selected from among plural other working means models pre-associated with the

one standard part model based on an automatic determination according to the simulation that it

satisfies a working condition of the working means model, as claimed by the Applicant.

Therefore, Claim 9 is deemed novel and allowable.

4.3   Applicant's third set of claims consists of Claim 10.

        Independent Claim 10 is directed to simulation apparatus for simulating working of the

standard part models arranged in the design model. The claim identifies the uniquely distinct

features of:

        "said working means model information storage section stores information of a plurality

of reference positions for any working means model which allows operation thereof in a plurality

of different methods, and said working simulation execution section executes a working

simulation according to the plurality of operation methods, where the result of the execution of

the working simulation is used to automatically select the working means model from among

plural other working means models pre-associated with the standard part models".

The closest prior art fails to teach or fairly suggest that the result of the execution of the

working simulation is used to automatically select the working means model from among plural

other working means models pre-associated with the standard part models, as claimed by the

Applicant. Therefore, Claim 10 is deemed novel and allowable.

4.4   Applicant's fourth set of claims consists of Claim 11.

Independent Claim 11 is directed to a simulation apparatus for simulating working of a

working means model to be used for the one or more standard part models arranged in the design

model. The claim identifies the uniquely distinct features of:

"wherein said working means model information storage section stores information of a

plurality of reference positions for any working means model which allows operation thereof in a

plurality of different methods and said working simulation execution section executes a working

simulation according to the plurality of operation methods while evaluating a workability for

each of the operation methods of the working means model, and said workability evaluation

section evaluates the workability of the working means model for each of the working methods

based on a result of execution of the working simulation according to the working method and

also based on the information of the attribute, where the workability indicates whether or an

extent to which the working means model is able to work the one or more standard part models".

The closest prior art fails to teach or fairly suggest wherein said working means model information storage section stores information of a plurality of reference positions for any working means model which allows operation thereof in a plurality of different methods and said working simulation execution section executes a working simulation according to the plurality of operation methods while evaluating a workability for each of the operation methods of the working means model, and said workability evaluation section evaluates the workability of the working means model for each of the working methods based on a result of execution of the working simulation according to the working method and also based on the information of the attribute, where the workability indicates whether or an extent to which the working means model is able to work the one or more standard part models, as claimed by the Applicant. Therefore, Claim 11 is deemed novel and allowable.

4.5   Applicant's fifth set of claims consists of Claims 13-21.

Independent Claim 13 is directed to a simulation method for simulating workability according to a working means model used to work the standard part models arranged in the design model. The claim identifies the uniquely distinct features of:

"displaying a process of the execution of the simulation in a virtual three-dimensional space, where the working means model is automatically selected from among plural other working means models pre-associated with the standard part models based on an automatic determination as a result of the simulation that it satisfies a working condition of the working means model".

The closest prior art fails to teach or fairly suggest where the working means model is automatically selected from among plural other working means models pre-associated with the standard part models based on an automatic determination as a result of the simulation that it satisfies a working condition of the working means model, as claimed by the Applicant. Therefore, Claims 13-21 are deemed novel and allowable.

4.6   Applicant's sixth set of claims consists of Claim 22.

Independent Claim 22 is directed to a computer-readable recording medium having a simulation program recorded thereon for causing a simulation of working of a working means model used to work the standard part models arranged in the design model. The claim identifies the uniquely distinct features of:

"a function of displaying a process of the execution of the simulation in a virtual three-dimensional space, where the working means model is automatically selected from among plural other working means models pre-associated with the one standard part model based on an automatic determination according to the simulation that it satisfies a working condition of the working means model".

The closest prior art fails to teach or fairly suggest where the working means model is automatically selected from among plural other working means models pre-associated with the one standard part model based on an automatic determination according to the simulation that it satisfies a working condition of the working means model, as claimed by the Applicant. Therefore, Claim 22 is deemed novel and allowable.

4.7   Applicant's seventh set of claims consists of Claim 23.

Independent Claim 23 is directed to a designing supporting apparatus. The claim

identifies the uniquely distinct features of:

"a design data outputting section for outputting data regarding the subject designed in the

virtual three-dimensional space and data regarding the attribute information extracted by said

attribute information extraction section as design data, said attribute information including

working means model information, which indicates details of a working means model to be used

in working the one or more standard part models and which is linked with said standard part

model information, where the working means model is automatically selected from among plural

other working means models pre-associated with the standard part models based on an automatic

determination according to a result of a three-dimensional simulation of it working a standard

part model that it satisfies a working condition of the working means model".

The closest prior art fails to teach or fairly suggest said attribute information including

working means model information, which indicates details of a working means model to be used

in working the one or more standard part models and which is linked with said standard part

model information, where the working means model is automatically selected from among plural

other working means models pre-associated with the standard part models based on an automatic

determination according to a result of a three-dimensional simulation of it working a standard

part model that it satisfies a working condition of the working means model, as claimed by the

Applicant. Therefore, Claim 23 is deemed novel and allowable.

4.8   Applicant's eighth set of claims consists of Claims 24 and 25.

        Independent Claim 24 is directed to an apparatus for simulating work upon a model. The

claim identifies the uniquely distinct features of:

        "a processing unit simulating three-dimensional working of the standard part model by

the working means model to automatically determine whether or an extent to which the arranged

working means model can work the standard part model according to the arrangement

information, the working requirements of the working means model and according to the design

model, where the working means model is automatically selected from among plural other

working means models pre-associated with the standard part models based on an automatic

determination according to the simulation that it satisfies a working condition of the working

means model".

        The closest prior art fails to teach or fairly suggest where the working means model is

automatically selected from among plural other working means models pre-associated with the

standard part models based on an automatic determination according to the simulation that it

satisfies a working condition of the working means model, as claimed by the Applicant.

Therefore, Claims 24 and 25 are deemed novel and allowable.

5.   Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

571-272-3717. The examiner can normally be reached on Monday through Friday from

8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kevin Teska, can be reached on 571-272-3716. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

9600.

K. Thangavelu
Art Unit 2123
January 13, 2005

SAMUEL BRODA, ESQ.
PRIMARY EXAMINER